Teaching music analysis to first-year undergraduates with radical subject-specific diversity

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Abstract

The Music department at the University of Liverpool is unusual in its entrance requirements: it does not require any formal musical background for students of popular music subjects. Meanwhile, it is also home to students with high-level formal training in western classical music, who arrive expecting to make use of their competence in standard analytical methods. Both groups of students, and students whose skills are somewhere in between these extremes, sit alongside each other in a compulsory first-year module called Music as Sound. The aim of this module is to develop students' abilities to talk productively about musical detail in a very wide range of musical repertoires. This article reflects on the challenges of developing the module in ways that are meaningful to students with and without formal musical training, particularly because the module does not aim to provide musical theory where it is absent in students' musical language; instead, it changes the very nature of the goal, by providing a new mode of analysis that challenges notationally competent students to think about analysis without traditional western scores, and also introduces analytical techniques to non-notationally literate students without recourse to the technical tools and language of western classical music.

Keywords

analysis, graphic notation, pedagogy, higher education, interdisciplinarity

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In January 2005, as a late-stage doctoral student, I was approached by the University of Liverpool to teach a first year undergraduate module, a twelve-week class consisting of weekly two-hour lectures, called *Popular Music Analysis*. I was sent through some specifications for the course, detailing the aims, objectives, and prerequisites for the students, and I went about designing a syllabus that I thought would suffice. During the last part of the first class, I presented as an example a light-touch analysis I had prepared of Whitney Houston's 'One Moment in Time', describing how the musical detail contributed to an overall message in the song of personal triumph. I drew the students' attention in particular to the bridge, and mentioned the tension generated by a chromatic descent and (re-)ascent in the bass parts, the *ritardando* that never yields to a *tempo primo*, the emphasis lent to the lyrics by triplets in the drums and bass, and the insistently repeated quarter-note/two eight-notes motif, passed from the drums to brass through other instruments. At the end of the first session, two students approached me and very shyly confessed that they had hardly understood a word of the analysis, because they had no musical background at all, and no comprehension of the technical language I had been using. My response to them was simple: that they would, as a direct consequence, find the class very hard indeed, and that they probably ought to find a different module to take. They, in reply, pointed out that the class was compulsory for them on their degree programme, and that no musical background had been expected in their admission to the programme.

And so it became clear that one small but crucial detail had not managed to make its way to my understanding of the expectations of the class. Given the broad aims and the module's title, I had designed a syllabus that presumed a reasonable level of literacy in western notation and the accompanying terminology; however, I subsequently learned that the University of Liverpool is unique in the country in not requiring any formal musical training (or, for that matter, any informal practical musical experience) of its students of popular music. It was a simple mistake, but it was significant, for it was not until the end of that first class that I

realised I had eleven weeks left of a course about music analysis, a group of students whose notational literacy ranged from highly competent to entirely absent, and very little idea of how to fulfil the module's aims given that diversity.

The module has since been renamed *Music as Sound*, and is determinedly cross-repertoire, considering popular music in the broadest sense, western art music from a long history, world musics of a wide geographical spread, and a great deal that does not easily fit into any category at all. As such, in 2008, it became a compulsory module for all students in the department, which offers degree programmes specialising in popular music and western art music. Its central aim is to develop an approach to music analysis that places sound before notation, altogether side-stepping standard western notation. In the process, it aims on the one hand to develop music-analytical tools that can be used by students without a technical musical background, and, on the other, to challenge those students who do have such a background to approach the act of analysis from a different angle. What this article offers is an explanation of the module's structure, in the hope that others might see the potential use value beyond the immediate context of this one department's students—a use that extends even beyond education into some small promise for music scholarship.

Class demographics

In an average year, the module recruits between 70 and 80 students from across the Music Department, many of whom will be studying only Music or Popular Music, but others of whom will be combining Music or Popular Music with another discipline in the University. Common combination subjects include a range of modern languages, History, Business Studies, Mathematics, and Communication/Media Studies. Students for whom Music (by which is meant western classical music) is part of their programme are required to have a reasonably high standard of notational competence on entry, typically measured by success in school-leavers' qualifications[1]; those studying Popular Music without Music are not required to have any notational competence at all. Across various combinations of subjects being studied, an average cohort consists of just under 50% of the class certainly having formal musical training resulting in high-

level notational competence as a requirement of entry to their programme of study, and the remainder who are not required to have such competence, but who may happen to. Typically, this latter sector has included a proportion who have at least basic notational competence, but who are often self-taught musicians who tend to favour aural learning. The module on average has just over 80% of students with a high level of practical musical experience, and a remainder who may not have done anything beyond what is compulsory in school.[2] So, the module faces two related challenges. First, how does one train students with no notational literacy and no formal musical training (beyond what is compulsory in schools) to talk usefully about musical details, in twelve weeks of two-hour lectures? And second, what, could a course that answers the first question offer that is of use to the students with significant formal musical backgrounds? That is to say, how can one reconcile the answer to the first question with the needs of the remaining students?

I struggled for some time, in various incarnations of the course, to find a solution to both questions. The key to finding one came in the moment that I separated *notational* literacy from *musical* literacy. Since I cannot myself remember learning to read music—just I cannot remember learning to read English—the simple fact that the two literacies are not the same had escaped me. But from my realisation of it, several elements fell into place that had not until that point:

1. The notationally illiterate and musically inexperienced students have a lifetime's experience of engaging with music as listeners, and their presence on the course was a sign of the importance at least of listening in their lives. At least as much as any socialised adult with adequate hearing, they were able to make significant musical observations, albeit that these might not be expressed in the terminology of standard western notation, or might be barely noticed by the student themselves. For instance, the distinction between a radio station they want to listen to and one they do not would be taken in a couple of seconds before retuning, a distinction that is based on the discernment of a great deal of musical information, and the application of it.
2. The goal of the module therefore did not have to be training notationally illiterate students in a language that the other students already had. This, I had already accounted for to an extent, since a twelve-week course clearly

does not give sufficient time to achieve such a thing, but for some time everything I was doing had felt like a substitute for an existing specialist language. Rather, if the first proposition above was correct, then the hurdle for notationally inexperienced students to overcome was at least as much one of confidence in their own listening ability as anything else.

3. On the other hand, I had to admit that notationally literate and musically experienced students tended to have had a great deal more practice in listening, and may be more attuned listeners for it.
4. Conversely, however, it became ever more apparent that the training these students had experienced had also attuned them to *ways* of listening—trained them in what things to listen *for*—in ways that the other students had less experience of. Consequently, they too had a hurdle to overcome, to open their ears.[3]
5. Relatedly, those students with the formal musical training that brings notational literacy often expressed a great anxiety about undertaking any analysis without a score, despite my assurances that they were not being tested on identification of intervals, chords, inversions, and so on for which a score would be a distinct advantage. These students, then, also had this hurdle to overcome.

From these building blocks—each logically derived and founded on the observations I made over several years of adjusting the course—I gradually devised the course as it is now.

Module structure

The module is split into two parts over twelve weeks. After an introductory week, the first part explores tools for describing musical details as divided into individual musical parameters, with one parameter forming the basis of one week's provision:

- Pitch: this includes melody and harmony, but is also more broadly conceived to deliberately include portamento, vibrato, malintonation, etc.[4]
- Time: this includes rhythm, but, like Pitch, is broadly conceived to include the microdetails of, for instance, a voice dragging behind the beat, or a pianist's *rubato*.

- Instruments: this covers arrangement/orchestration, as well as the timbre of individual instruments, the timbral palette of a piece, and so on.
- Voice: as a more specific manifestation of the previous parameter, this includes all the material functions of the voice *as* voice—not lyrics, but the timbres, breaths, mouth movements, and so on
- Space: this parameter accounts for the three-dimensional perception of recorded music—tracing the perception of distance/proximity, panning, and frequency distribution very roughly along the lines of Allan Moore's "soundbox" model (see Moore and Dockwray, 2010).

This part is assessed through a portfolio of five analyses of given pieces of music; the remainder of the course is given over to applying the tools to cultural questions (for instance representation of gender or race in audiovisual media)—resulting in an analytical essay.

In the case of each parameter, students explore a range of representational methods using graphic means of their own devising, having been shown a variety of examples drawn up either by previous students or by me for the purpose of illustration. Students are encouraged to think about both the *microdetails*—the second by second detail of simply what is happening within that parameter—and the *macrolevel*—the patterns, repetitions, variations, and so on: I liken this to zooming in and zooming out on a picture. In all cases, they are urged to use graphic means primarily for their workings, as their portfolios allow them only 500 words per parameter to explain the functions of that parameter in an entire piece of music. The defining features of the module, then, are twofold: first, the premise that any given student, with a functioning pair of ears and a focused listening practice, can communicate a large amount of useful information about musical detail without recourse to standard western notation; and second, the avoidance of jargonistic terms associated with traditional analytical approaches to western music, not just (or even primarily) in order to "accommodate" those students without formal western musical training, but in order to encourage those students who do have such training to think differently about their listening practices.

Student work

In asking students to use graphic representations to communicate the most relevant sonic information at any given point in a track, I urge them to avoid western notation for representation, if indeed they are literate in the system, and I do so in part because of the distinct limitations of that system for representational purposes. That is to say, western notation is very good at representing certain features—precise rhythms within the limits of certain genres, and twelve specific pitches—but not inherently capable of representing other features, such as micro-temporal or –tonal inflections, timbre, production, or spatial construction. Moreover, even within the boundaries of its expertise (that is pitch and rhythm in particular), the system is not specifically geared towards the representation of patterns and relationships. Consequently, it is perfectly possible to look at a score and see a motivic fragment be passed from one instrument to another, or to see a dotted quarter-note/eighth-note rhythm be contracted to a dotted eighth-note / sixteenth-note one over the course of a few bars; however, if either of these is the key feature to which the analyst is trying to draw attention, then it does not necessarily leap off the page of notation, since the notation purports to present its information neutrally and without bias towards certain melodic or rhythmic ideas. Of course, simply marking up a score could easily enough draw these details out, and supporting verbal description is typically at the centre of analytical work. However, in asking students not to use the standard score at all, I aim instead to persuade them first to rely more heavily on their ears and second to give focused thought to what it is they are attempting to represent in their analyses.

In expounding my approach to analysis in this module, I offer various examples of how students might go about visually representing what they hear, but they are encouraged always to place their own listening at the centre of their work, and to develop whatever graphical means they should require to illustrate the point they wish to make. No doubt a remnant of both linguistic and notational writing amongst other things, students' diagrams for pitch relations typically work from left to right temporally and up to down on the page for pitch changes. We talk in class not about the tonic (or dominant, and so on), but about pitch "anchor points" or "foundation lines" as locations around which pitches might organise themselves or towards which they might seem to gravitate (that is, towards what we might typically call resolution, but in a way that also accounts for sustained tension by

virtue of activity towards or around a non-tonic pitch centre). We also focus not on absolute pitches, noting instead that absolute pitch may well be of subordinate importance, and looking closely at relative pitch, pitch range, pitch direction, and patterns of pitch. Often, then, students' illustrations for work on pitch will draw attention to melodic motifs or fragments, and point out important pitch locations in relative terms.

Figure 1: Pitch in 'Don't Rain On My Parade,' Barbra Streisand. This diagram was the amalgamation of three others, which illustrated the individual components of percussion, brass, and strings. The purpose was to demonstrate the extent of melodic activity between the tonic anchor point.

For the representation of time, illustrations generally use boxes to indicate blocks of time—beats, bars, or other units of musical time measurement—and symbols or shading to indicate rhythmic events. But conceiving of time broadly means that analysis can extend beyond metric rhythm and into considerations of relative time as well as accounting for the pushes and pulls of *rubato* or other temporally flexible musical moments. Consider, for instance, the kind of microtemporal inflections that, in no small part, define "phrasing": where a note is held for a fraction of a second longer than neighbouring notes of equal notated duration in order to bring emphasis to a phrase shape, or where a vocal line enters fractionally before or after a beat in order to shape the meaning of a lyric—these are the kind of details that students on the module are encouraged to notice.

Figure 2: Time in Duo: 'La la la' from Bizet's Carmen, performed by Angela Gheorghiu and Roberto Alagna. This could easily enough be notated—of course, it is in Bizet's score. But this illustration demonstrates very visibly the contrasting rhythmic patterns between Don José (on the beat) and Carmen (triplets across the beat), arguably offering a more "tangible" representation even for the notationally literate, thereby meeting the challenge of communication about musical detail to non-specialists.

Figure 3: Time in 'I Am Chromosome,' Martin Grech. This illustrates a free-time section that would otherwise be hard to notate and even harder then to decipher; it also accounts for inconsistent pulse in a way that standard notation little allows for.

Once we enter the discussion of instruments and their role in a given piece, the class steps beyond that which the western score is best equipped to tell us. When considering this musical parameter, class discussion focuses primarily on the relationship between timbre and structure. This is one parameter where students find the task of analysis particularly complex, because they tend to mistake the question of how timbral arrangement helps structure a piece for a simple exercise in identifying what instruments enter where. To illustrate the point, I use a number of different tracks in which arrangement works differently to help define or articulate the piece's structure. In one, a recording of 'Libertango' by Astor Piazzolla, a small number of melodic ideas are articulated by different instruments, then passed around, and eventually coalesce. In another, 'Crazy Little Thing Called Love' by Queen, the song's sections are signalled very clearly by solo fills from particular instruments—most often the drums or bass guitar. The purpose of this example is not so much to demonstrate how the structure is defined by instrumental combinations (as it is in the Piazzolla track), so much as to show how instruments contribute to shaping the listener's *hearing* of the structure of the song. Likewise, when playing them Katchaturian's 'Sabre Dance', they are directed to hear how the different timbres of particular instrumental combinations contribute as much to the structure of the piece as do the melodic and harmonic shapes: in the first section, the timbral emphasis is largely on the harsh and brash qualities of the percussion, both tuned and untuned; the call and response between flutes and trombones is, I suggest, as much about an opposition of timbre as it is about the similarity of pitches; and when the piece yields to a section governed by the thickness and timbral evenness of the string section, the formal structure is heard to be significantly linked to a shift in timbral palette. Perhaps because of the lack of critical language for talking about timbre, in part a result of the under-privileging of this parameter in much musical analysis, students tend to avoid discussion of timbre in their work on instruments. While *Music as Sound* does not seek to provide such a critical language, its insistence on the consideration of this non-notatable but important musical parameter does aim to bring it more prominently into the listening activities of students.

Figure 4: Instruments in 'Hava Naguila,' Gloria Lasso. This student used colour to group together instruments according to the Sachs-Hornbostel system of

aerophones, idiophones, and so on. He used shading to indicate prominence in the texture, and thick borders to indicate the most prominent part.

The voice yields similar problems to those raised by instruments, because again the consideration of specific vocal qualities has not made its way significantly into standard modes of analysis. Roland Barthes famously called for a change in the object of analysis in his essay 'The grain of the voice' (1977), but as Jonathan Dunsby has recently noted, the idea "has been mythologized" and has become "something of a slogan" (2009: 113). Consequently, despite its comparative prevalence as an idea in music studies (especially popular music studies), it is not fully incorporated as a model, and neither has its potential been realised in specifically analytical work. Because of the complexities and issues within Barthes's work, I do not spend time on the article itself in the module; the class does, however, take up the particular idea of "the body in the voice as it sings" (Barthes 1977: 188) and students are asked to listen to vocal lines with this in mind, seeking to pinpoint changes in timbre, the relationship between timbre and mechanisms of vocal production (head/chest voice), audible breaths, and so on. Using as a starting point the mythology of the voice's capacity for emotional expression, we undertake close listening of some popular songs with which the students will probably be familiar, and identify specific moments where 'emotion' is being performed and constructed by the singer through a few simple vocal devices: changes between head and chest voice; the audibility of transitions between them; changes of timbre in the voice; audible inhalations and exhalations; and the use of vibrato (its speed, width, and its starting point within a held note). By identifying these specific features, the last chorus of Whitney Houston's 'I Will Always Love You' (as one of the examples I use) can be seen not as a minute and a half of 'emotional' singing, but as a sequence of events that *signify* 'the emotional' to the listener.

Figure 5: Vowel shifts in 'Open Heart Zoo,' Martin Grech. Vowel sounds on the vertical axis are mapped against time on the horizontal axis.

Finally, we consider the act of recording in a consideration of production and, in particular, the construction of space within a recording. This, like voice and instrumental timbre, is an aspect that has long been understood to be beyond the representational means of the traditional western score, and it is a common enough

example posited by popular music studies scholars as a critique of score-centred analysis. Allan Moore proposed the notion of the 'soundbox' in the early 1990s (1993), and Theodore Gracyk (1996), Albin Zak (2001), and Mark Katz (2004) are among those who have since argued for the importance of a consideration of space through this or similar models. But the three-dimensionality of the recording is something that applies just as readily to recordings of western art music as it does to popular music, and examples are played to illustrate the importance of mix and microphone placement. When considering space, then, we talk a great deal in terms of multi-dimensionality, focusing largely on the X-axis of width (through the use of stereo recording) and the Z-axis of depth (through the placement of different lines further forward or backward in the mix). To consider the third dimension, the sonic Y axis of 'height', we start to overlap somewhat with considerations of pitch; but here the focus is on frequency ranges, the framing thereof within an overall sonic space, and their relationships to the X and Z axes too.[5] To represent three-dimensional space in a two-dimensional format is something of a challenge for students; typically they use some form of isometric illustration in order to account for Z-axis of mix depth, but equally they might represent only two of the three axes at once.

Figure 6: Space in 'Erosion and Regeneration,' Martin Grech. This very clearly captures the 3D experience of sound.

Figure 7: Space in 'Bohemian Rhapsody,' Queen. This student chose to take two dimensions of space at a time, cross-referencing and layering multiple illustrations like this one to demonstrate the three-dimensional experience of the recording.

Reflections

On the one hand, it is quite clear that this module provides a workable set of tools for notationally illiterate students. Indeed, those students on programmes for which notational literacy is an entry requirement are only achieving marginally superior average grades on average.[6] It is hard to extrapolate meaning from grades; students are assessed not only on the quality of their analysis but also on how well they engage with the underlying principles of graphic representation (which, in many

ways, the more formally trained students are more resistant to). But it is nonetheless notable that those students without any guaranteed notational literacy or, for that matter, musical experience, are certainly holding their own in terms of achievement.

What is more interesting to me, though, is not the remedial support that such an approach might offer, but the possibilities of the principles of the module to enhance analytical work more generally. For popular music studies, the benefits are very clear. The field itself is constituted of scholars of a similar diversity to those in the lectures for this module—having emerged from Sociology, Cultural Studies, and many other departments *even before* Music departments joined the fray, there is what Martin Cloonan calls a "fault line" (2005: 87) and Mike Jones calls a "fissure […] between analysis of popular music texts and analysis of popular music contexts" (2000). Notation remains a fraught political area; the analysis of texts and fluency in standard notation and its terminology seem synonymous, as least in the minds of those very many scholars who don't have that fluency…those who profess to "not knowing about music" despite being experts in their fields of musical inquiry, and seem as a consequence to avoid asking questions of a textual nature. For the study of western art music, the situation is rather different. The discipline has emerged from within the same expert language it uses as its currency, and its objects of study are—not exclusively but often—those for which standard notations serve an adequate purpose. Indeed, there is nothing to criticise *per se* about the fact that the study of music has generated a specialist language, just as many other fields of academic enquiry have. And there are certainly very many cases in which that specialist language is required, being the most precise tool for answering certain musical questions. What I am proposing here—for the study of *all* kinds of music—are two things. First, that as musicologists of any variety, we have some responsibility to make our observations meaningful to those without the same expert language. A hypothetical scenario posited by Susan McClary and Robert Walser will serve to elucidate:

> [T]he sad fact is that what created a particular effect in a piece of music—an effect so powerful that it can make an arena full of nonmusicians jump to their feet and scream with ecstasy—can be the result of an E-natural rather than an E-flat or an anticipation of a mere thirty-second note's duration. The sociologist who has jumped up with excitement but who is cautious to understand such reflexes in material terms turns to the adjacent musicologist and asks: "How did that

> happen?" The musicologist calmly replies: "You were expecting an E-flat, and he sang an E-natural." And the sociologist explodes because she knows perfectly well that she was not expecting an E-flat, that in fact she would not know an E-flat from a hole in the wall, and that the musicologist is once again taking a perfectly transparent phenomenon and obfuscating—flaunting specialized and apparently useless information. (1990: 279)

Why the fact is "sad" is not obvious; and one might well criticise the pair for the hyperbole of their description. Still, if the sociologist is not fluent in the musicologist's language, then she might well have switched off—it is certainly one potential response to highly specialist language in any discipline. One significant difference with music is this: everyone wants a piece of it. It is ubiquitous in people's lives, people have strong emotional attachments to the music they use, and form their very identities through their use of music. There is also a strong popular ideology of the 'magic' of music—that music 'speaks to the soul' through some 'universal language'. Such talk of 'magic' does not apply to physics—no-one generally minds gravity being explained, or it being used in an explanation. But to identify the importance of an E-flat over an E-natural is, for some hypothesised sociologists at least, to pull back the curtain and reveal the man behind the Wizard of Oz. Nevertheless, while it is perfectly clear that certain musicological questions can only be asked and answered with recourse to the specialist language of standard notation, it is equally evident that, if musicology at its broadest aspires to function as a genuinely interdisciplinary player in the academy more widely, we must rise to the challenge of this question: what level of meaningful detail *can* we communicate *without* our specialist language?

My second proposition is that the philosophy underpinning *Music as Sound* could usefully extend the scope of the very object of music analysis and enhance most analytical endeavours. Within the body of analytical work concerned with western art music, there is already a significant subset of work known as performance analysis, and this might come closest to being something like what *Music as Sound* is working at. At its very broadest, though, such scholarship falls just short of unpicking an underlying "conceptual paradigm" that underpins the notion of performance in the study of western art music. Nicholas Cook argues that "the basic grammar of performance is that you perform *something*, you give a performance 'of' something. In other words, language leads us to construct the performance as supplementary to the product that occasions it or in which it

results" (2001: parag. 2); turning not only to language but to a range of cultural forces, he identifies the trope of performance as "a conceptual paradigm that constructs process as subordinate to product", where "the performer becomes at best an intermediary [...] and at worst a 'middleman'" (parag. 5). What *Music as Sound* proposes is that the performance *as such* is the object of the study, as opposed to a performance 'of' something. It is also clear that a great deal of work has emerged in the fields of popular music studies and ethnomusicology that is concerned the same set of questions as is *Music as Sound*, and that issues of transcription, of performance analysis, and of the ideologies underpinning standard western notation are being confronted in those fields. This second proposition of mine, then, is that such work has more to bear on the analysis of western classical music than has yet been admitted to the latter field. Popular music analysts very often assert that the tools from western art music analysis are not suitable to their own objects of analysis, and in so doing frequently situate their field as 'other' to a hegemonic analytical endeavour, where western art music is the default. My question goes further: if popular music analysts are very used to considering timbre, recording and production, microrhythmic detail, and so on, then how might these issues influence the analysis of western classical music?

What the question comes down to, in the end, is perhaps the question of what it is we are analysing. Many scholars have already observed and commented on the problematic relationships among *music*, *performance*, and *notation*. Daniel Leech-Wilkinson is one**:**

> [T]he idea that music exists independently of performance, although a staple of musicology and the philosophy of music, is beginning to look distinctly shaky. For most musical cultures in the world (including western popular music) it is nonsensical. For western classical music it's conceivable only because of notation. The more we believe that notation encodes the work, rather than simply providing sketchy performance instructions using which a performer can make the work, the more inclined we are to believe that works exist in some abstract yet ideal form independent of any performance. (2009: chap. 1.3, parag. 38)

Adding *analysis* to the discussion further complicates things, since it immediately raises the question of what it is that music analysts *really* seek to analyse:

- Is it the **score**? But this is limited, since it is not performance, and *music* may *require* performance by definition.

- Is it the **performance**? But what then of the fleeting, transient nature of sound?
- It it a **recording?** That is not necessarily the same thing as a performance, bearing as does the trace of the process of recording—decisions about microphone placement, the physical space of recording, and so on.[7]

Clearly, we have a hard time claiming that we analyse *music*—what, after all, does it mean to make such a claim? And all the objects we might tolerate in its stead bring with them certain limitations and present certain challenges. What *Music as Sound* offers is not the ultimate solution to these quite enormous questions. But I would argue that placing the recording at the forefront of analysis informs the analytical project in ways that placing the score at the forefront cannot (whilst being more pragmatic than seeking to analyse a live performance). This is, to an extent, a perfectly obvious statement; where a score contains a certain kind of detail prescribing pitches and durations intended for performance, a recording includes all kinds of details that are not notated, including many for which standard western notation is ill-suited in the extreme—timbre, for instance, including vocal timbres, and especially acoustics. Conversely, of course, the recording is its own object. Yet I would suggest that the *recording stands as its own kind of performance*—one that is not just the product of singers and instrumentalists, but also of sound engineers and producers, whose agency as performers of sorts ought to be accounted for. Taken as such, it offers a genuinely viable alternative to live performance and an important starting place for the music-analytical project.

Allan Moore has already described the recording as "the primary text" of rock music (1993), and given the growing field of performance analysis in classical musicology as well as the ethnomusicological work already alluded to, I do not mean to suggest that any element of this module is new as such. Rather, I am suggesting that the whole is greater than the sum of its parts, and the novelty of this module is in bringing together all the elements it does, as well as using them systematically to train undergraduates. As a single module in an undergraduate curriculum, *Music as Sound* offers some tools for notationally illiterate students to talk about musical detail, and enhances the analytical work of notationally literate students in more traditional modules. Beyond the walls of Liverpool University's

Music department, however, the principles underpinning the module would no doubt enhance all corners of musicological endeavour, and whatever the repertoire.

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[11] In the UK, a typical measurement would be a Grade B at A Level Music. Typical alternatives are a 6 in Music in the International Baccalaureate or a Grade 8 Music Theory qualification from the Associated Board of the Royal Schools of Music.

[2] In the UK, the National Curriculum requires that Music is part of children's education to the age of 14. However, the quality of music education is highly variable, particularly in primary schools (to the age of 11), as individual schools may or may not have music specialist (or confident non-specialist) teachers.

[3] As an example, in one tutorial session, I discussed a particular Lebanese song with a highly trained classical guitarist, a song about which he was to write a short assignment on pitch. Talking about a particular interval within a melodic contour, he said, "Well, that's a minor second". The interesting thing was that actually, it was not. The higher of the two notes was, on close listening, very slightly flat (according to an equally tempered tuning system) and the interval was consequently very slightly less than the minor second the guitarist described. It might be that he *heard* it as a strict minor second, without consideration for the tuning, or it might be that he heard the precision of tuning and decided it was not of significance. But in either case, his description revealed a kind of quantising that spoke of his musical training.

[4] Whilst I have been keen to impress upon my students the ideological nature of notation systems and analytical methods, I also freely admit that my own tools are hardly innocent of the same charge. But I start with Pitch not because I think melody and harmony are most important; rather, because it is my instinct that most of us, in our everyday encounters with music, find pitches to be the first thing we hang on to. In conjunction with rhythm, of course, if we find ourselves singing along, it is probably to a tune—not in a timbre, or simulating panning.

[5] For instance, a mid-frequency component such as the voice will often be placed at the front of a mix and in the centre of the stereo field, but it could be mingling with many other mid-frequency components (as in the gradual layering of voices in the Beach Boys' 'Good Vibrations') or it could be set apart in a frequency space left open for it (as in U2's 'With or Without You').

[6] Data is available to discuss further on request from the author.

[7] The sounds of live performance are, in their own way, a product of technologies—regardless of any deliberate technological intervention (microphones, pedals, live auto-tune, and so on), sound is fundamentally and literally shaped by the space in which it occurs.